Volunteer Lake Assessment Program Individual Lake Reports

HALFMOON POND, WASHINGTON, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	4,947	**Max. Depth (m):**	5.8	**Flushing Rate (yr^{-1})**	16.6
Surface Area (Ac.):	83	**Mean Depth (m):**	2.6	**P Retention Coef:**	0.38
Shore Length (m):	3,200	**Volume (m^3):**	856,000	**Elevation (ft):**	1432

TROPHIC CLASSIFICATION

Year	Trophic class
1981	MESOTROPHIC
2001	MESOTROPHIC

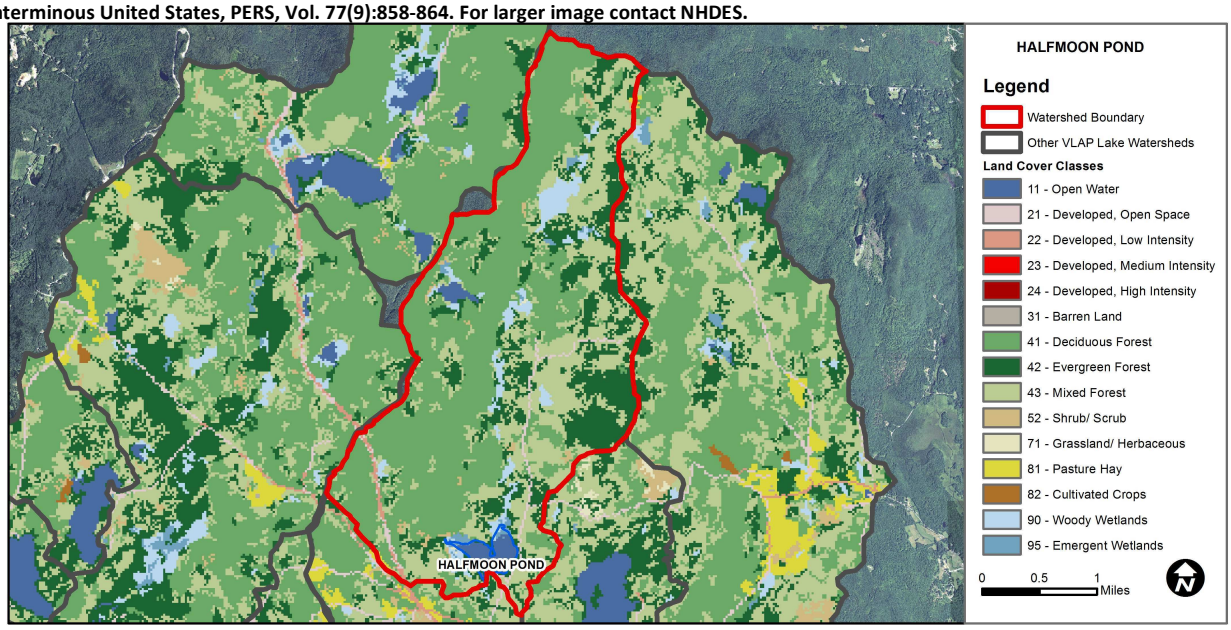
KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	1.87	Barren Land	0	Grassland/Herbaceous	0.04
Developed-Open Space	1.21	Deciduous Forest	44.45	Pasture Hay	0.16
Developed-Low Intensity	0.4	Evergreen Forest	19.38	Cultivated Crops	0
Developed-Medium Intensity	0	Mixed Forest	26.91	Woody Wetlands	4.1
Developed-High Intensity	0	Shrub-Scrub	0.73	Emergent Wetlands	0.76

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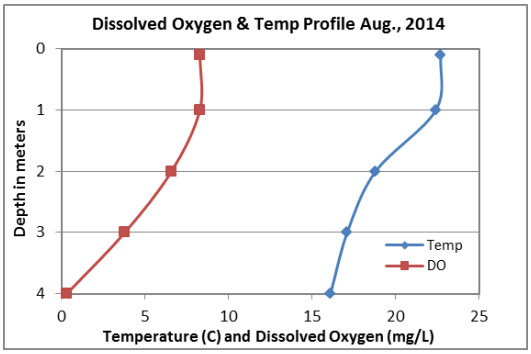
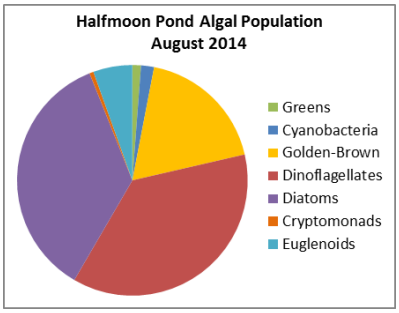
Halfmoon Pond, Washington

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were slightly elevated in June and then decreased to average levels in August. The 2014 average chlorophyll level was slightly greater than the state median and decreased slightly from 2013. Historical trend analysis indicates stable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot, Outlet and North Inlet conductivity and chloride levels were low and much less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic (upper water layer) conductivity since monitoring began. Other area lakes also experienced a similar trend. Boat Launch conductivity remained slightly elevated and greaterthan other stations.
- **Total Phosphorus:** Epilimnetic phosphorus levels remained stable from June to August and was less than the state median. Historical trend analysis indicates relatively stable epilimnetic phosphorus with moderate variability between years. Hypolimnetic (lower water layer) phosphorus levels increased slightly from June to August suggesting the potential of phosphorus release from bottom sediments when dissolved oxygen levels decreased to below 1.0 mg/L. North Inlet and Outlet phosphorus levels remained stable and low. Boat Launch phosphorus levels were elevated in June and August.
- **Transparency:** Transparency remained stable from June to August and was slightly less than the state median. Historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began.
- **Turbidity:** Epilimnetic turbidity was slightly higher in June potentially due to the higher algal growth. Hypolimnetic turbidity was slightly above average for that station but remained stable from June to August. Boat Launch turbidity was slightly elevated in August.
- **pH:** Deep spot and tributary pH levels were less than the desirable range 6.5-8.0 units and potentially critical to aquatic life. Historical trend analysis indicates highly variable epilimnetic pH since monitoring began.
- **Recommended Actions:** Boat Launch water quality is a concern as levels are much higher than deep spot and tributary stations. Investigate potential point and no-point sources of pollution in the sub-watershed. Contact the VLAP Coordinator for assistance. Keep up the great work!





Station Name	Table 1. 2014 Average Water Quality Data for HALFMOON POND								
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	1.65	5.19	3	18.0	10	2.25	2.69	1.21	5.91
Hypolimnion				19.6	17			2.79	5.47
Boat Launch				67.9	24			2.08	5.69
Dam Outlet				19.2	9			0.94	5.86
North Inlet				16.8	10			1.09	5.95

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Improving	Data significantly decreasing.	Chlorophyll-a	Stable	Trend not significant; data show low variability.
pH (epilimnion)	Stable	Trend not significant; data highly variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Stable	Trend not significant; data moderately variable.